

Recovery Plan Action Status

Plan Name: Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*)

Plan Status: Draft

Plan Date: 02-Jul-99

Lead Agency: USFWS

Lead Office: Sacramento Fish And Wildlife Office

(916)

414-6600)

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Giant garter snake (<i>Thamnophis gigas</i>)	1	1.1.1	Protect habitat on private lands in the Colusa Basin for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (<i>Thamnophis gigas</i>)	3	1.1.10	Protect habitat on private lands in the White Slough/ Duck Slough/ Southern Delta area for GGS	Not Started			Conservation program participants (easements, incentives), County governments, Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (<i>Thamnophis gigas</i>)	1	1.1.11	Protect habitat on private lands in the North and South Grasslands for GGS	Not Started			Flood control districts, Grasslands Water District, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	1	1.1.12	Protect habitat on private lands in the Mendota area for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	1.1.13	Protect habitat on private lands in the Burrell/Lanare area for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.1.2	Protect habitat on private lands in the Butte Basin for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	1	1.1.3	Protect habitat on private lands in the Gilsizer Slough area for GGS	Not Started			Conservation program participants (easements, incentives), Reclamation Board / California Department of Water Resources, Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.1.4	Protect and restore habitat on private lands in the Robbins area for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	1.1.5	Protect habitat on private lands in District 10 for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	3	1.1.6	Protect habitat on private lands in the Northern Yolo Basin area for GCS	Not Started			Conservation program participants (easements, incentives), County governments, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.1.7	Protect habitat on private lands in the Southern American Basin (includes Natomas Area)	Not Started			City governments, County governments, Reclamation Board / California Department of Water Resources, Habitat Conservation Plan Permittee	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	1.1.8	Protect habitat on private lands in the Putah Creek/Liberty farms/Northern Delta area for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	1	1.1.9	Protect habitat on private lands in the Stone/Beach Lakes area for GGS	Not Started			Conservation program participants (easements, incentives), Resource conservation districts, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	1.2	Develop or update management recommendations for GGS habitats	Not Started			U.S. Bureau of Land Management, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.3.1	Develop/update and implement management plan for Sacramento NWR Complex for GGS	Ongoing Current	FY 2009		U.S. Fish and Wildlife Service	Work type not yet selected	Labor type not yet selected	GGS management to be part of Comprehensive Conservation Plan. Sac NWRC has several parcels devoted to maintaining GGS habitat at several refuges (eg. Colusa and Sutter).
Giant garter snake (Thamnophis gigas)	1	1.3.10	Develop/update and implement management plan for China Island/Los Banos/Volta WA's for GGS	Not Started			California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	2	1.3.11	Develop/update and implement management plan for San Luis NWR for GGS	Not Started			U.S. Fish and Wildlife Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.3.2	Develop/update and implement management plan for the Upper Butte Basin WA for GGS	Not Started			California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	1	1.3.3	Develop/update and implement management plan for the Gray Lodge WA for GGS	Not Started			California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.3.4	Develop/update and implement management plan for Gilsizer Slough for GGS	Not Started			California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	2	1.3.5	Develop/update and implement management plan for Stone Lakes NWR for GGS	Not Started			U.S. Fish and Wildlife Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.3.6	Develop/update and implement management plan for White Slough EA for GGS	Not Started			California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.3.7	Develop/update and implement management plan for Valensin Ranch for GGS	Ongoing Current	FY 2007		U.S. Bureau of Land Management	Management: Planning	Species Expert	Any habitat restoration costs not included
Giant garter snake (Thamnophis gigas)	3	1.3.8	Develop/update and implement management plan for Sherman/Decker Island area for GGS	Not Started			California Department of Water Resources	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.3.9	Develop/update and implement management plan for Mendota WA for GGS	Not Started			California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	1	1.4	Expedite permit approval, where practical, for levee repairs to protect habitat of GGS	Ongoing Current	FY 2007		Flood control districts, Reclamation Board / California Department of Water Resources, U.S. Army Corps of Engineers	Management: Planning	Contract	

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Giant garter snake (Thamnophis gigas)	2	1.5	Review water efficiency measures that may conflict with GGS management	Ongoing Current	FY 2007		CALFED (State/Federal Consortium), Reclamation Board / California Department of Water Resources, California State Water Resources Control Board, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service	Management	Contract	Some water transfers and the drought water bank have started being managed with respect to needs of GGS.
Giant garter snake (Thamnophis gigas)	2	1.6	Explore, develop and implement methods to assure water deliveries for GGS	Ongoing Current	FY 2008		Northern California Water Association, Reclamation Board / California Department of Water Resources, California State Water Resources Control Board, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management	Contract	Drought water bank. Water conserved for rice farming during the summer may benefit GGS habitat requirements.
Giant garter snake (Thamnophis gigas)	2	1.7	Develop and implement a monitoring program for GGS populations	Ongoing Current	FY 2005		U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Population Assessment	Species Expert	\$30,000 required to develop monitoring program. To date GGS surveys are completed at various locations and when funding allows. Surveys are not coordinated to allow for population trend analysis.
Giant garter snake (Thamnophis gigas)	3	2.4	Survey Recovery Unit 1 to determine GGS distributional limits	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	2.5	Develop guidelines for collection of GGS voucher specimens	Not Started			U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	3	3.1	Identify suitable sites and conduct surveys for repatriation of GGS	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Cost = \$50,000 per site
Giant garter snake (Thamnophis gigas)	3	3.2	Prepare repatriation plans	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Cost = \$5,000 per site
Giant garter snake (Thamnophis gigas)	3	3.3	Develop and Implement repatriation plans and monitor repatriated populations	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Costs could include radio telemetry studies and standard monitoring
Giant garter snake (Thamnophis gigas)	2	4.1	Conduct mark recapture studies on GGS	Ongoing Current	FY 2007		U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Population Assessment	Species Expert	Conducted mark recapture at various sites. During surveys all GGS receive PIT tags. Estimated a population size at Badger Creek site using mark recapture method.
Giant garter snake (Thamnophis gigas)	2	4.10	Study the rate at which giant garter snakes populate newly created managed marsh	Ongoing Current	FY 2007		County governments, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Population Assessment	Species Expert	USGS tracked the success of restoration work at the Colusa NWR during 2000 to 2005. Study began in 2010 at Wildland's Gisizer Slough conservation bank on GGS colonization.

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Giant garter snake (Thamnophis gigas)	2	4.2	Conduct genetic analyses on GGS	Ongoing Current			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	There have been 3 genetic studies of the GGS conducted. The latest study was funded by the CVPIA in 2008 and 2009 and included samples across the species range. Nuclear and mitochondrial DNA evaluated by CSU Chico. Results are being interpreted now.
Giant garter snake (Thamnophis gigas)	2	4.3	Conduct radio telemetry studies on GGS	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Several radio telemetry studies were performed by USGS and by CDFG. Early implants were threatening to GGS, but current exterior implants are not harmful. Radio telemetry studies have assisted in determining home range and habitat preference.
Giant garter snake (Thamnophis gigas)	3	4.4	Conduct a population viability analysis for the GGS	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Analysis to be conducted after Tasks 4.1 and 4.3 are completed
Giant garter snake (Thamnophis gigas)	3	4.5	Develop guidelines for collecting GGS specimens for research	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	3	4.6	Conduct a study of effective buffers between GGS and urban development	Not Started			California Department of Transportation, U.S. Federal Highway Administration, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	2	4.7	Study the effects of contaminants on GGS	Ongoing Current	FY 2009		U.S. Bureau of Reclamation, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Eric Hansen was funded by CVPIA to conduct a study of contaminant effects as well as parasitology of the GGS. Results were published in 2011. Contaminants were not found to be a significant direct threat to adult giant garter snakes, but may threaten the prey base.
Giant garter snake (Thamnophis gigas)	3	4.8	Study the health of selected GGS populations	Ongoing Current	FY 2009		U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	GGS rangewide were part of study of GGS health funded by CVPIA and conducted by Eric Hansen and Ray Wack (DVM). The following were included in the study: hematology, parasitology, bacteriology and contaminants. A comparison was made with the co-occurring non-listed congener species the Valley garter snake.
Giant garter snake (Thamnophis gigas)	3	4.9	Study the effects of introduced predators (i.e., bullfrogs), on GGS populations	Not Started			U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	2	5.1.1	Finalize ditch and canal maintenance guidelines for water users	Not Started			California Rice Industry Association, Northern California Water Association, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	2	5.1.2	Develop guidelines that minimize impacts to giant garter snakes when conducting canal vegetation management to control mosquitos	Not Started			Mosquito vector control districts, U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	5.1.3	Develop and update guidelines for pesticides used in areas inhabited by GGS	Not Started			California Department of Pesticide Regulation, California Rice Industry Association, Northern California Water Association, U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Environmental Protection Agency	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	5.2.1	Develop and distribute factual information to interested and effected private landowners	Not Started			California Department of Transportation, California Farm Bureau Federation, California Rice Industry Association, Northern California Water Association, Reclamation Board / California Department of Water Resources, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, California Department of Fish and Game, Private landowners, Non-governmental organizations	Work type not yet selected	Labor type not yet selected	

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Giant garter snake (Thamnophis gigas)	3	5.2.2	Develop and distribute factual information to public land managers and schools	Not Started			U.S. Fish and Wildlife Service, California Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	2	6.1	Develop agricultural incentives for landowners	Not Started			California Rice Industry Association, Northern California Water Association, Non-governmental organizations	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	2	6.2	Provide construction incentives for water districts and users	Not Started			California Rice Industry Association, Northern California Water Association, Reclamation Board / California Department of Water Resources, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, California Department of Fish and Game, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Giant garter snake (Thamnophis gigas)	3	6.3	Promote development of HCP's	Ongoing Current			California Rice Industry Association, Northern California Water Association, U.S. Fish and Wildlife Service, California Department of Fish and Game, Non-governmental organizations	Management: Habitat Maintenance and Manipulation	Contract	Several HCPs were completed which include measures to protect the GGS, including the following: 1. The Maxwell Irrigation District 2. Natomas Basin 3. Metro Air Park (in Natomas Basin) 4. San Joaquin County multi-species 5. East Contra Costa County